

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

1-19. (canceled)

20. (currently amended) A method of operating a plant, comprising:

determining naphthenic acid corrosivity of a first refinery feedstock, and determining content of a beta fraction of total naphthenic acids in a second refinery feedstock; wherein the step of determining naphthenic acid corrosivity of the first refinery feedstock comprises determination of an alpha fraction of naphthenic acids, wherein the naphthenic acids in the alpha fraction are characterized by at least two of (a) a molecular weight of between 125 to 425, (b) a true boiling point of less than 725 °F, (c) a solubility in water at a pH of 6 to 9 between 0.1-2.5 mg/liter, and (d) a solubility of iron naphthenates in oil formed from the naphthenic acids of < 0.1 mg/liter;

wherein the naphthenic acids in the beta fraction are characterized by at least two of (a) a molecular weight of between 325 to 900, (b) a true boiling point of between 725 °F and 1500 °F, (c) a solubility in water at a pH of 6 to 9 between 0.0-0.3 mg/liter, and (d) a solubility of iron naphthenates in oil formed from the naphthenic acids of > 0.08 mg/liter;

combining the first and second refinery feedstock to form a combined refinery feedstock having a combined naphthenic corrosivity; and

wherein the amount of the second refinery feedstock in the combined refinery feedstock is a function of the beta fraction of total naphthenic acids in the second refinery feedstock such that the combined naphthenic corrosivity is less than the naphthenic corrosivity of the first refinery feedstock.

21. (canceled).

22. (original) The method of claim 20 wherein the second refinery feedstock comprises Athabasca oil sand crudes.

23-25. (canceled)

26. (previously presented) A method of operating a plant, comprising a step of determining a total acid number of a feedstock, and a step of increasing the total acid number using a beta fraction of naphthenic acids in an amount effective to reduce naphthenic acid corrosivity of the feedstock.
27. (previously presented) The method of claim 26 wherein the step of increasing the total acid number comprises combining a hydrocarbon composition enriched in the beta fraction of naphthenic acids with the feedstock.
28. (previously presented) The method of claim 26 wherein the step of increasing the total acid number comprises combining naphthenic acids having an average molecular weight of at least 350 with the feedstock.
29. (previously presented) A method of producing a hydrocarbon product, comprising:
identifying a resource as comprising a hydrocarbon feed, wherein the hydrocarbon feed was previously rejected for use as a feed to at least one of a crude unit and a vacuum unit due to naphthenic acid corrosivity;
determining a ratio of beta naphthenic acids to alpha naphthenic acids in the feed; and
processing the hydrocarbon feed such that the ratio of beta naphthenic acids in the feed to alpha naphthenic acids in the feed increases.
30. (original) The method of claim 29 wherein the step of processing comprises hydrothermal processing.
31. (original) The method of claim 29 wherein the resource comprises opportunity crudes.
32. (currently amended) A method of informing a consumer about corrosivity of a feedstock marketing, comprising determining a quantity of a beta fraction of total naphthenic acids in a refinery feedstock, wherein the naphthenic acids in the beta fraction are characterized by at least two of (a) a molecular weight of between 325 to 900, (b) a true boiling point of between 725 °F and 1500 °F, (c) a solubility in water at a pH of 6 to 9 between 0.0-0.3 mg/liter, and (d) a solubility of iron naphthenates in oil formed from the naphthenic acids of > 0.08 mg/liter, and providing information correlating the quantity of the beta fraction with reduced naphthenic acid corrosivity of the refinery feedstock.

33. (original) The method of claim 32 further comprising providing information of the quantity of the alpha fraction of total naphthenic acids in the refinery feedstock.
34. (canceled)